



# Australian Bureau of Statistics

## 8127.0 - Characteristics of Small Business, Australia (Reissue), 2004

Previous ISSUE Released at 11:30 AM (CANBERRA TIME) 29/04/2005

### Summary

#### Characteristics of Small Business, Australia

This reissue replaces Main Features released on 28 April. Previous version did not include commentaries relating to small business operators and small business.

#### NOTES

#### ABOUT THIS PUBLICATION

This publication presents the results of the Characteristics of Small Business Operators Survey which was conducted in June 2004 as a supplementary topic in the Australian Bureau of Statistics (ABS) monthly Labour Force Survey. This survey of households addressed a number of aspects of the operations of small business as well as identifying the characteristics of small business operators. The survey covers all private sector, non-agricultural small businesses. Similar surveys were previously conducted in February 1995, February 1997, November 1999, June 2001 and June 2003. The ABS plans to conduct an expanded version of the survey in June 2005. Data are presented mainly for the June 2003 and June 2004 surveys. Where it is appropriate to do so, broad comparisons with earlier surveys' results are included in commentary.

#### RELATED PUBLICATIONS

Other publications which may be of interest are:

- **Small Business in Australia, 2001** (cat. no. 1321.0)
- **Business Use of Information Technology, 2003-04** (cat. no. 8129.0)
- **Australian Industry, 2001-02 and 2002-03** (cat. no. 8155.0)
- **Australian Bureau of Statistics Business Register, Counts of Businesses, June 2004** (cat. no. 8161.0.55.001) expected release June 2005
- **Experimental Series, Entries and Exits of Business Entities, Australia, 2001-02, 2002-03 and 2003-04** (cat. no. 8160.0), expected release June 2005.

#### CAUTION ON USE OF ESTIMATES

The counts of businesses and business operators presented in this publication should be used with caution. Their main purpose is to derive proportions of businesses and operators with selected characteristics. They should not be used to determine level, nor growth or decline in the number of small businesses over time because of the sampling error associated with each year's estimate (see paragraphs 23 to 25 of Explanatory Notes). The ABS advises that business-based surveys (as opposed to household surveys) are a better source for small business growth figures (e.g. cat. nos. 8155.0, 8161.0.55.001, 8160.0).

#### COMPARISONS WITH OTHER ABS DATA

Estimates of the number of businesses operating in Australia can be derived from a number of sources. They may relate to a particular point in time or may be presented as an annual figure. However, these estimates will not always show the same results. Variations will occur because of differing data sources, statistical units, scope and coverage definitions between surveys, as well as variations due to sampling and non-sampling error. These terms are described in the Explanatory Notes.

The estimates of the number of business operators provided in this publication include own account workers (sole

proprietors and partners of non-employed businesses); employers (operators of unincorporated employing sole proprietorships and partnerships); as well as working directors of incorporated companies. In other ABS publications, information can be found on numbers of own account workers and employers, but working directors of incorporated companies are generally treated as employees of the business and are not identified as business owners or operators.

Users comparing these results to those of other ABS series, should do so with care, as some other series only relate to employing businesses and do not include details of non-employed businesses.

## **STATE AND TERRITORY DATA**

Care should be taken in the interpretation of estimates for states and territories with relatively small household populations such as Tasmania, the Northern Territory and the Australian Capital Territory. These populations generally have commensurately smaller sample sizes and smaller data estimates. As such, the estimates are generally subject to higher relative standard errors and can lead to the exaggeration of percentage change movements.

## **UNPUBLISHED STATISTICS**

More detailed small business statistics from the survey are available on request from the ABS. For example, many of the statistics presented here may be available by different cross classifications from the data presented in the publication.

## **COMMENTS ON THIS PUBLICATION**

The ABS welcomes comments and suggestions from users on future surveys. These should be addressed to the Director, Business Demographics and Frames Section, Australian Bureau of Statistics, Locked Bag 10, Belconnen ACT 2616

## **ROUNDING**

Where figures have been rounded discrepancies may occur between the sum of component items and the total.

## **INQUIRIES**

For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070 or Helen Harkin on Canberra (02) 6252 6531.

## **CHARACTERISTICS OF SMALL BUSINESS OPERATORS**

This chapter presents information on the characteristics of Australian small business operators, including their sex, age, location, hours worked and place of birth.

## **NUMBER OF OPERATORS**

In June 2004 there were 1,660,000 operators of the 1,269,000 non-agricultural small businesses in Australia.

At June 2004:

- small businesses with only one operator accounted for 72.6% of all small businesses up from 68.5% in 2003
- the proportion of small businesses with two operators was 25.1%, down from 29.0% at June 2003.

## NUMBER OF BUSINESSES OPERATED

At June 2004, the majority of small business operators were involved in one business only (92.5%), a proportion which remained relatively unchanged from the June 2003 estimate.

### By sex

The majority of both male and female small business operators ran a single business at June 2004. Incidence of operation of multiple businesses by males and females was 7.8% and 6.9% respectively.

### By state and territory

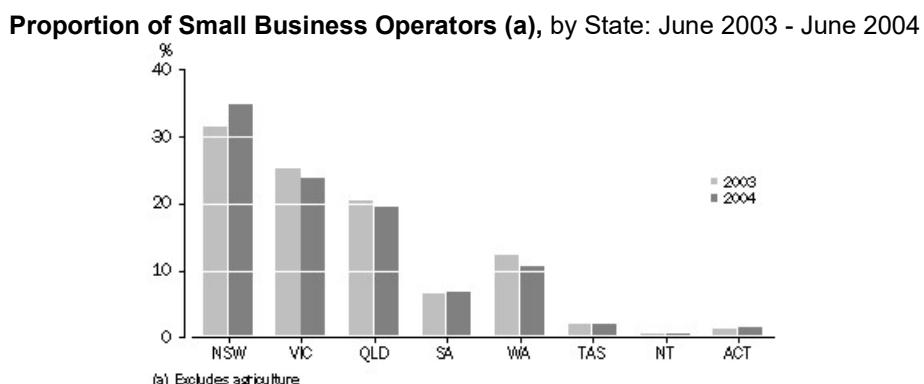
The proportions of operators involved in only one business were similar across all states and territories (between 91.6% and 94.0%).

## SEX OF OPERATORS

Males comprised 1,131,000 (68.1%) of all non-agricultural small business operators. There were 529,000 (31.9%) female small business operators. These proportions have remained relatively unchanged since 1995.

## LOCATION OF OPERATORS

The graph below illustrates the distribution of small business operators across states and territories. This distribution generally reflected the population distribution.



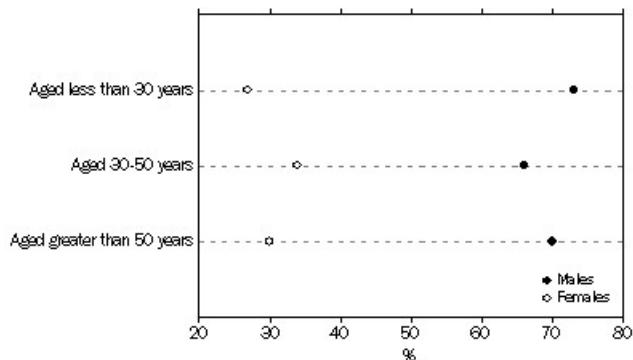
## AGE OF OPERATORS

Table 1.1 shows that the majority of small business operators (59.4%) were aged between 30 and 50 years at June 2004, an increase of 1.8 percentage points. The proportion of operators aged greater than 50 years fell by 2.0 percentage points. Since 1995 there has been an increase in the proportion of operators aged greater than 50 years (7.0 percentage points) and a decrease in operators aged 30 to 50 years (-5.3 percentage points).

### By sex

The distribution of small business operators at June 2004 by sex across age categories is shown in the following graph. Male operators made up the largest proportion in all age categories.

**PROPORTION OF SMALL BUSINESS OPERATORS, by age and by sex - June 2004**



The most significant change in the overall distributions was in the group of small business operators aged less than 30 years, where the proportion of male operators rose from 65.2% at June 2003 to 72.6% at June 2004, resulting in a commensurate drop in the proportion of female operators.

For male small business operators, the proportions of those aged less than 30 years and 30 to 50 years increased by 1.0 and 1.3 percentage points respectively.

For female small business operators, the proportion of those aged 30 to 50 years increased (2.9 percentage points), whilst those aged less than 30 years recorded the largest decrease (-1.7 percentage points).

### **By state and territory**

In all states and territories the majority of small business operators were in the 30 to 50 year age category. This proportion ranged from 50.6% in Northern Territory to 61.2% in Western Australia. Business operators aged less than 30 years comprised the smallest proportion of operators in all states and territories (ranging from 6.8% to 12.9%).

New South Wales and Western Australia both recorded significant increases in the proportion of operators aged 30 to 50 years, 3.1 and 7.0 percentage points respectively. They also both recorded corresponding decreases in the proportion of operators aged greater than 50 years, -3.6 percentage points in New South Wales and -4.2 percentage points in Western Australia.

## **USUAL HOURS WORKED BY OPERATORS**

### **Full-time operators**

The 1,660,000 non-agricultural small business operators in Australia at June 2004 included 1,114,000 (67.1%) full-time operators.

The 1.1 million full-time small business operators comprised:

- 65.1% who usually worked between 35 and 50 hours each week
- 30.2% who usually worked between 51 and 75 hours each week
- 4.7% who usually worked more than 75 hours each week.

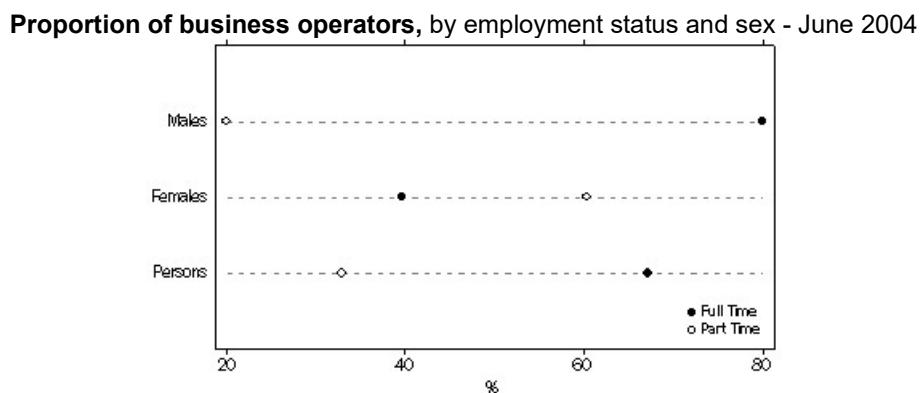
This reflected a rise of 3.3 percentage points in full-time operators working between 35 and 50 hours each week and decreases in the other categories. The proportion of full-time operators working between 35 and 50 hours each week has gradually increased since 1995, rising from 59.9% to 65.1% in 2004.

### **By Sex**

An estimated 80.0% of male small business operators worked full-time. Of these, 36.6% worked more than 50 hours a week. These proportions remained relatively unchanged from June 2003.

However, only 39.6% of female operators worked full-time. Of these, 27.5% worked more than 50 hours a week.

The proportions of both male and female full-time small business operators working between 51 and 75 hours a week decreased by 2.4 and 4.1 percentage points respectively.



### By State and Territory

Across the states, the proportions of operators working full-time in their business remained largely unchanged between June 2003 and June 2004. The exceptions were Western Australia which increased 3.4 percentage points to 65.0%, and South Australia which decreased by 3.4 percentage points to 61.2%, the lowest proportion of any state. The highest proportion (86.2%) of full time operators was in the Northern Territory which recorded an increase of 10.0 percentage points.

### Part-time operators

In June 2004, part-time operators constituted 32.9% (546,000) of the 1,660,000 small business operators in Australia.

Female operators comprised the majority of all operators working part-time (58.6%), down from 61.6% at June 2003, and 66.6% in 1995.

The proportion of female small business operators working part-time fell by 2.0 percentage points to June 2004 whilst the proportion of male operators rose slightly (0.7 percentage points).

### OPERATORS BORN IN AUSTRALIA OR BORN OVERSEAS

In June 2004, 30.2% (500,900) of all small business operators were born overseas, a rise of 0.8 percentage points from June 2003.

### By sex

Proportions of overseas born male (31.1%) and female (28.2%) operators both increased in the twelve months to June 2004 by 0.5 and 1.2 percentage points respectively.

### By state and territory

The states and territories with the highest proportions of small business operators who were born overseas were Western Australia (38.7%), Northern Territory (34.5%) and New South Wales (31.0%). Tasmania continued to record the lowest proportion of overseas born small business operators (22.2%).

## CHARACTERISTICS OF SMALL BUSINESSES

This chapter presents selected characteristics of small businesses including details of the ownership structure, length of operation, the use of computers and Internet access. Data are classified by state and territory and business size, and by sex of operators.

Estimates of businesses from the June 2003 and June 2004 surveys are presented in the tables, together with estimates of the annual change in percentage points to assist analysis.

## NUMBER OF BUSINESSES

There were an estimated 1,269,000 small businesses operating in Australia in June 2004.

At June 2004:

- 56.3% (715,000) were non-employing businesses, down from 56.5 in June 2003
- 32.8% (416,000) employed 1-4 people, a slight drop from 33.0% in June 2003
- 10.9% (139,000) employed 5-19 people, up from 10.5% in June 2003.

## EMPLOYER SIZE GROUP

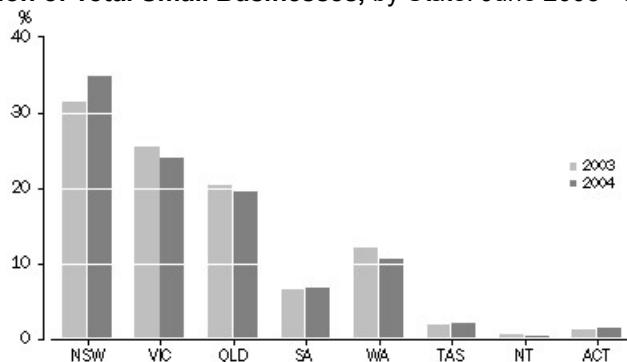
There was little change in the relative proportions of small businesses classified by employer size over the last 12 months. The majority of small businesses (56.3%) were non-employing businesses. The proportions of businesses with 1-4 employees (32.8%) and 5-19 employees (10.9%) remained stable.

The proportion of non-employing businesses (58.3%) has increased since February 1995 (48.3%). Consequently, the proportion of businesses with 5-19 employees decreased from 17.8% in 1995 to 10.9% in 2004.

## LOCATION OF OPERATION

The distribution of small businesses across states and territories at June 2004 reflected the general population distribution within Australia at that time.

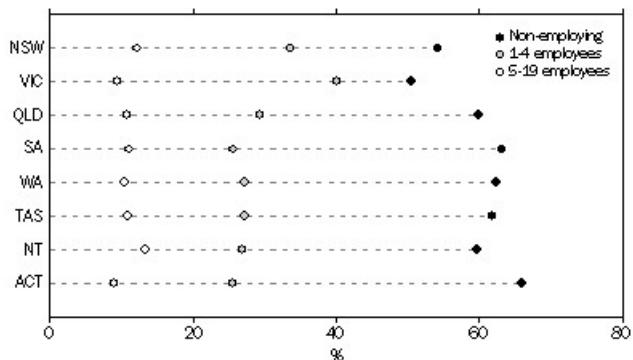
**Proportion of Total Small Businesses, by State: June 2003 - June 2004**



## By employer size group

Non-employing businesses comprised the majority of small businesses in all states. However, there were considerable differences in the proportions; the Australian Capital Territory recorded the largest proportion of non-employing businesses (65.8%) followed by South Australia (63.1%). In Victoria (50.5%) and New South Wales (54.2%) non-employing businesses comprised a smaller proportion of all small businesses.

**Proportion of Small businesses, by State and by business employer size group - June 2004**



## LENGTH OF OPERATION

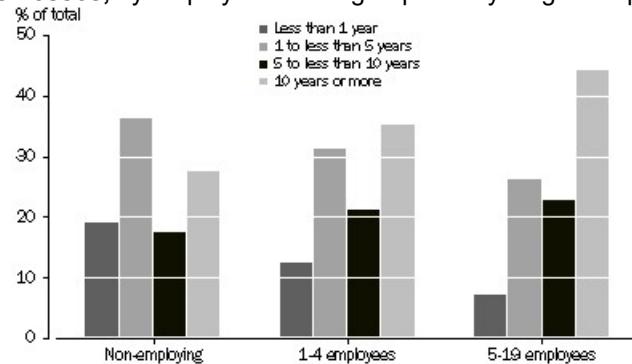
At June 2004 the majority of small businesses had been in operation from one to less than five years (33.5%), a proportion largely unchanged from 2003.

The largest proportional change at June 2004 was for businesses aged less than one year which increased by 2.6 percentage points to 15.5%.

### By size of business

The majority of non-employing businesses, 36.2%, had been in operation from one to less than five years. For businesses employing 1-4 people, the majority had been in operation for ten years or more (35.2%). The majority of businesses (44.1%) in the 5-19 employee size category had also been in operation for ten years or more.

**proportion of businesses**, by employment size group and by length of operation - June 2004



## OPERATORS PER BUSINESS

At June 2004, 72.6% (921,000) of all small businesses were operated by a single operator, an increase of 4.1 percentage points. The percentage of businesses with two operators decreased to 25.1%, a drop of 3.9 percentage points.

### By size of business

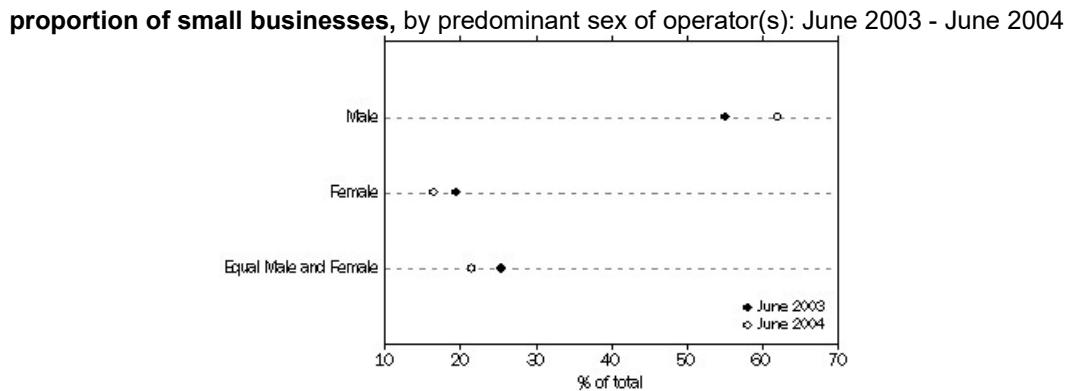
On average the number of operators per small business increased commensurately with the business employer size.

## PREDOMINANT SEX OF OPERATORS

There were 1,269,000 small businesses in Australia in June 2004, of which (62.0%) were operated by an individual male or predominantly by males, a significant increase from June 2003 (55.1%).

There were 21.5% (273,000) of businesses operated by equal numbers of males and females. The proportion of

businesses in this category declined by 3.9 percentage points. There were 16.5% of businesses operated predominantly by females, a drop of 3.0 percentage points on the June 2003 estimate.



### By size of business

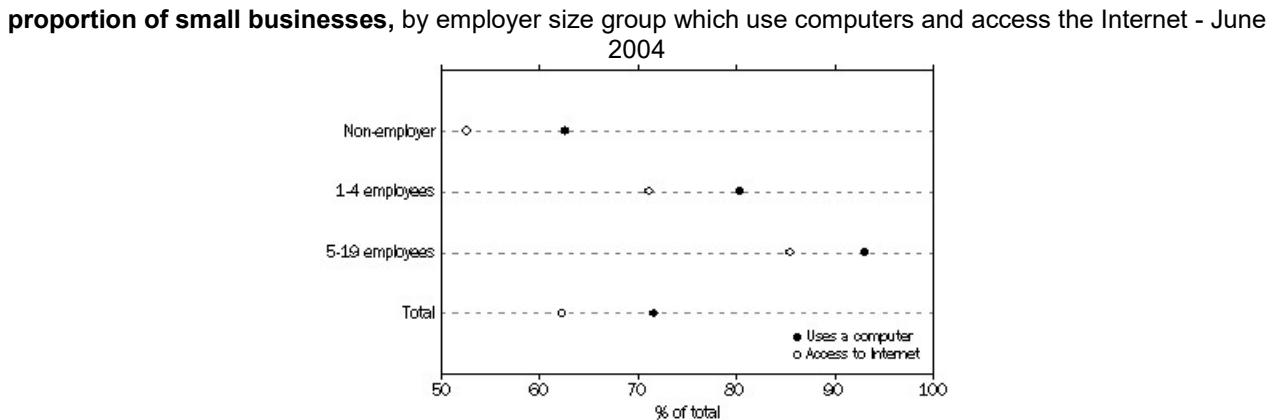
The non-employing business category was the most common business size group for both predominantly male operated businesses (57.7%) and for predominantly female operated businesses (83.2%). However, businesses operated by equal numbers of males and females recorded a significantly smaller proportion of non-employing businesses (31.7%).

### USE OF COMPUTERS AND THE INTERNET

When comparing these results to those of other ABS series, it should be noted that some series only measure the use of computers and the Internet by employing businesses.

In June 2004, 71.7% of small businesses reported that they were using computers in their business operations, a similar proportion to that recorded in June 2003. The proportion of businesses with access to the Internet (62.3%) also remained relatively unchanged from that recorded in June 2003. There was no significant change in the proportions of small businesses using computers in the twelve months to June 2004 for any of the employer size categories.

As the size of the business increased so too did the likelihood that the business used a computer, with 93.0% of businesses which employed 5-19 people, using a computer, compared to only 62.6% of non-employing businesses. Access to the Internet was more common in larger businesses.



For businesses which access the Internet, the most common usage was for email (86.9%), research (82.6%), and 'other' (89.1%).

The Internet was used by 34.4% of all small businesses for 'making or receiving payments', an increase of 5.1 percentage points from June 2003.

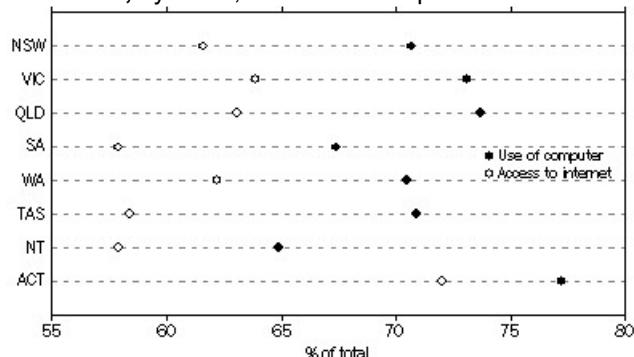
It should be noted that 'making or receiving payments', is not a measure of E-commerce or I-commerce, as these are defined as ordering goods and services electronically or via the Internet, not on the method of making/receiving payments.

### By state and territory

The proportion of small businesses across states and territories using computers in their business operations ranged from 64.9% to 77.2%, the national average being 71.7%. The Australian Capital Territory recorded the highest proportion of businesses with computers for all business size ranges.

Access to the Internet across states and territories followed a similar pattern to that of computer usage, with levels highest in the Australian Capital Territory (72.0%) and lowest in the Northern Territory (57.9%).

**Proportion of small businesses, by State, which use computers and access the Internet - June 2004**



## HOME BASED SMALL BUSINESS

Home based businesses have been identified based on two definitions:

- where most of the work of the business was carried out at the home(s) of the operator(s) - these businesses are referred to as 'Businesses operated at home'
- where the business has no other premises owned or rented other than the home(s) of the operator(s) - these businesses are referred to as 'Businesses operated from home'.

When combining figures for the two groups it should be noted that some overlap does occur.

In the first edition of this publication (1995), businesses were considered home based if 'one or more of the operators of the business worked more hours at home than away from home'. This definition is similar to the category 'Businesses operated at home' (as defined above), but is not strictly comparable.

## NUMBER OF HOME BASED BUSINESSES

Home based businesses make up a very large proportion of the total small business population in Australia. At June 2004, it was estimated that 67.5% of all small businesses were home based, compared to 58.3% in February 1997. These businesses were operated by 1,040,000 people, representing 62.6% of all small business operators. This reflected annual increases in the proportions of home based businesses and operators, 1.0 and 0.5 percentage points respectively.

At June 2004, 95.8% of all home based small businesses were operated from home, a proportion similar to that recorded for June 2003 and February 1997. There were 31.3% (268,000) of all home based small businesses which were operated at home. This was a decrease of 4.4 percentage points from June 2003. As noted above, overlap can occur between the 'operated at home' and 'operated from home' categories as businesses can operate without premises and also have most of the work carried out at the home of the operator(s), therefore satisfying both definitions. In June 2004, 27.0% (231,000) of all home based businesses were such businesses, involving 27.7% of all home based business operators.

## Home Based Small Businesses, June 2004

	Number of businesses '000	Number of operators '000
Operated from home	820	991
Operated at home	268	337
Operated both from home and at home	231	288
Total home based, operating either from home or at home	856	1,040

### By Size

There were 856,000 home based small businesses operating at June 2004, of which the majority (68.8%) were non-employing businesses. Of the remainder, 240,000 (28.1%) businesses employed 1-4 people and 26,000 (3.1%) employed 5-19 people.

### By Length of Operation

In terms of length of business operation, home based businesses followed a similar distribution pattern to that of total small business with:

- 16.9% in operation for less than one year old
- 36.2% in operation for one year to less than five years
- 17.6% in operation for five years to less than ten years
- 29.3% in operation for ten years or more

The most significant annual increase occurred in the proportion of home-based businesses in operation for less than one year which rose by 2.1 percentage points to 16.9%.

### Operators per Business

The majority (79.8%) of home based small businesses were single operator businesses. This proportion was higher than that recorded for small businesses overall, where 72.6% were single operator businesses.

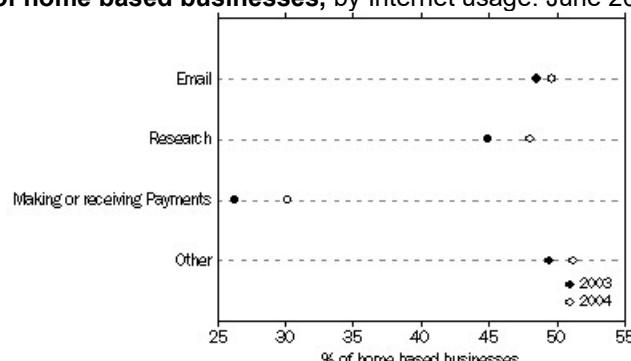
### Predominant Gender of Operators

Most home based small businesses (65.5%) were operated predominantly by males, a significant increase from the proportion recorded at June 2003 (58.2%). Consequently, the proportion of home based businesses operated predominantly by females decreased from 21.0% in June 2003 to 17.3% in June 2004. The proportion of businesses operated by equal numbers of males and females dropped by 3.6 percentage points to 17.2%.

### Use of Computers and the Internet

At June 2004, 68.2% of Australia's home based businesses were using computers in their business operations, compared to 71.7% for all small businesses. The majority of these home based businesses (86.2%), had access to the Internet. The most common use of the Internet by home based businesses was for email and 'other' purposes. Use of the Internet for all purposes increased, but particularly for 'making or receiving payments'.

**Proportions of home based businesses, by Internet usage: June 2003 - June 2004**



## **OPERATORS OF HOME BASED BUSINESSES**

### **By sex**

At June 2004, 70.7% (736,000) of all home based business operators were male, this represented a proportional increase of 2.9 percentage points. The proportion of female operators fell to 29.3% (304,000 operators).

### **By age**

The age distribution of home based small business operators was similar to the overall distribution for all small businesses, with 10.9% aged less than 30 years, 58.4% aged between 30 and 50 years, and 30.7% aged more than 50 years. These proportions remained relatively unchanged since June 2003.

### **By hours worked**

At June 2004, home based operators were more likely to be working part time than all small business operators, with 39.6% usually working less than 35 hours a week. This compares with 32.9% for all small business operators.

### **Born in Australia or born overseas**

The proportion of home based small business operators who were born overseas (29.8%) was relatively consistent with the proportion for all small business operators.

### **Number of businesses operated**

At June 2004, 93.9% of home based small business operators were involved in one business only. This compared with 92.5% for all small businesses.

### **By state and territory**

Home based small business operators were distributed across states and territories in a proportion similar to small business operators overall. Both proportions generally reflected the general population distribution within Australia.

## **About this Release**

### **ABOUT THIS RELEASE**

**This reissue replaces Main Features released on 28 April. Previous version did not include commentaries relating to small business operators and small business.**

Contains details of the June 2004 supplementary survey of households looking at the characteristics of small business operators and their businesses. Provides data on age, sex, ethnicity and hours worked as well as the length of operation of the business, number of operators per business and the use of computers and the Internet by small businesses. Where data are available, comparisons are drawn with previous survey results. Businesses based at home are also examined.

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## **Small Business Operators Ageing: ABS (Media Release)**

### **MEDIA RELEASE**

April 28, 2005

Embargoed: 11:30 AM (AEST)

56/2005

**Small Business Operators Ageing: ABS**

The most common small businessperson is a middle-aged man working between 35-50 hours per week from home and without any staff, according to the results of a household-based survey released today by the Australian Bureau of Statistics (ABS).

Small business operators reflected the national trend of an ageing population. In June 2004, 31% of all operators were older than 50 years, compared with 23% of all operators in February 1995 when the survey first began. The proportion of male operators aged more than 50 years increased from 25% to 32% and female operators, from 19% to 29% over the same period.

Since 1995, there has been a gradual increase in the proportion of full-time operators working between 35 and 50 hours per week, increasing from 60% in 1995 to 65% in 2004. Over the same period, the proportion of full-time operators working 51 hours or more per week has dropped from 40% to 35%.

Most Australian small businesses do not employ staff (56%). Of those that do, the majority employ fewer than five people. Since February 1995, the proportion of businesses that do not employ staff has risen from 48% to 56%, whilst the proportion of businesses that employ 5-19 people has dropped from 18% to 11%.

This household-based survey showed that 1.7 million people operated small businesses in Australia at June 2004. More than 1.1 million of the operators were male and the majority (65%) operated home based businesses.

More details are available in **Characteristics of Small Business, Australia** (cat. no. 8127.0).

**Media note:** This household-based survey is useful for analysing the characteristics of small businesses and their operators. It should not be used to analyse changes in counts of business. Other business-based ABS surveys are more suitable for this purpose.

## Explanatory Notes

### Explanatory Notes

#### INTRODUCTION

**1** The Characteristics of Small Business Operators Survey, Australia, was conducted in June 2004 as a supplementary topic to the Labour Force Survey.

**2** The Labour Force Survey is a household based survey, designed to regularly collect specific data on demographic and labour force characteristics of the Australian population. From time to time supplementary and special surveys of particular aspects of the labour force or other subjects are carried out.

#### DATA COLLECTION METHOD

**3** The data were collected by trained interviewers over a two week period. When completing the Labour Force Survey, those people whose main job or second job was operating a small business with less than 20 employees were asked some additional questions relating to the operations of that business.

**4** The supplementary survey asked small business operators to provide details on themselves as operators of small businesses and on the operations of their particular business. If there was more than one operator of the same small business in a household only one of the operators was asked to complete the questions relating to the operations of that business.

**5** The above method enabled the estimation of two discrete populations:  
(i) Small business operators and their characteristics.  
(ii) Small businesses and their characteristics.

#### SCOPE OF THE SURVEY

##### Business size

**6** Only those businesses which employ less than 20 people and their operators are included in the survey results.

## **Industry**

**7** All businesses identified were classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC) (cat. no. 1292.0), a detailed description of which appears in ANZSIC 1993.

The survey included businesses in the following industries:

Mining  
Manufacturing  
Construction  
Wholesale trade  
Retail trade  
Accommodation, cafes and restaurants  
Transport and storage  
Communication services  
Finance and insurance  
Property and business services  
Education, Health and community services  
Cultural and recreational services  
Personal and other services.

## **Geographical areas**

**8** The survey covered both rural and urban areas in all states and territories, excluding some 175,000 persons living in remote and sparsely settled parts of Australia. The exclusion of these persons will have only a minor impact on any aggregate estimates that are produced for individual states or territories, with the exception of the Northern Territory where such persons account for over 20% of the population.

## **Persons**

**9** The population for the survey includes all persons aged 15 years or over except:

- diplomatic personnel of overseas governments
- overseas residents temporarily in Australia
- members of non-Australian defence forces and their dependants stationed in Australia
- members of the permanent Australian defence forces
- boarding school students
- people in institutions such as hospitals, sanatoria and inmates of jails, reformatories etc.

**10** While these categories of people have an effect on the measurement of labour force levels, their exclusion is not expected to have significant impact on the identification of small businesses.

## **SURVEY DESIGN**

**11** As the Characteristics of Small Business Operators Survey is a supplementary survey to the Labour Force Survey, it has the same basic design. The survey was based on a multi-stage area sample of private dwellings (about 30,000 houses and flats), and covered about one-half of one per cent of the population of Australia.

## **COVERAGE OF THE SURVEY**

**12** Coverage rules are applied which aim to ensure that each person is associated with only one dwelling, and hence has only one chance of selection. The chance of a person being enumerated at two separate dwellings in the one survey is considered to be negligible.

**13** Persons who are away from their usual residence for six weeks or less at the time of the interview are enumerated at their usual residence.

## **PREVIOUS ESTIMATES**

**14** Where comparative data are available, this publication presents estimates from the June 2003 Characteristics of Small Business Operators Survey.

## **RELIABILITY OF ESTIMATES**

**15** The estimates provided in this publication are subject to two types of error: sampling error and non-sampling error.

### **Sampling error**

**16** As the estimates in this publication are based on information obtained from occupants of a sample of dwellings they are subject to sampling variability. That is, the estimates may differ from those that would have been produced if all dwellings had been included in the survey.

**17** One measure of the likely difference is given by the standard errors (SEs) (see the tables in the Appendix), which indicate the extent to which an estimate might have varied by chance because only a sample of dwellings was included. There are about two chances in three (67%) that a sample estimate will vary by less than one SE from the estimate that would have been obtained if all dwellings had been included, and about nineteen chances in twenty (95%) that the difference will be less than two SEs.

**18** Another measure of the sampling variability is the relative standard error (RSE), which is obtained by expressing the SE as a percentage of the estimate to which it refers. The RSE is a useful measure in that it provides an immediate indication of the error likely to have occurred due to sampling expressed as a percentage of the estimate.

**19** As the Appendix shows, the size of the SE increases with the size of the estimate. However, the smaller the estimate the higher the RSE. Thus, larger estimates will be relatively more reliable than smaller estimates.

**20** Very small estimates are subject to large RSEs, so for most practical purposes are unreliable. In the tables in this publication, only estimates with RSEs of less than 25% are considered reliable for most purposes. Estimates with RSEs greater than 25% but less than or equal to 50% are preceded by an asterisk (e.g. \*3.4) to indicate they are subject to high SEs and should be used with caution. Estimates with RSEs of greater than 50%, preceded by a double asterisk (e.g. \*\*0.3), are considered too unreliable for general use and should only be used to aggregate with other estimates to provide derived estimates with RSEs of 25% or less.

**21** Space does not allow for separate indication of the standard errors of all estimates in this publication. As a guide, the Appendix provides an average standard error applicable for estimates of the number of small business operators and the number of small businesses for any classification. Each SE Appendix is derived from a mathematical model, referred to as the 'SE model', which is created using data from the survey. It should be noted that the SE model only gives an approximate value for the SE for any particular estimate, since there is some minor variation between SEs for different estimates of the same size.

**22** If the actual value for a particular estimate is not shown in the Appendix, an approximate SE can be derived by taking the SEs shown for estimates on either side of the required value and interpolating a figure within that range.

### **Calculations of Standard Error (SE)**

**23** An example of the calculation and the use of SEs in relation to estimates of the number of small business operators is as follows. Table 2.1 shows that the estimated number of male small business operators in New South Wales is 411,100. Since this estimate is between 300,000 and 500,000, Appendix A shows that the SE for New South Wales will be between 10,400 and 12,900, and can be approximated by interpolation using the following general formula:

$$\begin{aligned} \text{SE of estimate} &= \text{lower SE} + (((\text{size of estimate} - \text{lower estimate}) / (\text{upper estimate} - \text{lower estimate})) \times (\text{upper SE} - \text{lower SE})) \\ &= 10,400 + (((411,100 - 300,000) / (500,000 - 300,000)) \times (12,900 - 10,400)) \\ &= 11,789 \\ &= 11,800 \text{ (rounded to the nearest 100)} \end{aligned}$$

**24** Therefore, there are about two chances in three that the value that would have been produced if all dwellings had been included in the survey will fall in the range 399,300 to 422,900 and about 19 chances in 20 that the value will fall in the range 387,500 to 434,700.

**25** Similarly, SEs are calculated for estimates of the number of small businesses using the Appendix. For example, table 3.1 shows that the estimated total number of small businesses in Australia is 1,269,900. This estimate is between 1,000,000 and 2,000,000, so the SE for this estimate will be between 18,100 and 26,200, and can be approximated using the same interpolation formula as above, with the resulting SE being 20,300 (rounded to the nearest 100).

#### Proportions and percentages

**26** Proportions and percentages formed from the ratio of two estimates are also subject to sampling errors. The size of the error depends on the accuracy of both the numerator and the denominator. A formula to approximate the RSE of a proportion is given below. This formula is only valid when x is a subset of y.

$$RSE\left(\frac{x}{y}\right) = \sqrt{[RSE(x)]^2 - [RSE(y)]^2}$$

**27** For example, in table 2.1, the estimate for the total number of small business operators in NSW is 579,100. The estimated number of male small business operators in NSW is 411,100, so the proportion of small business operators in NSW who are male is 411,100/579,100 or 71.0%. The SE of the total number of small business operators in NSW may be calculated by interpolation as 13,600. To convert this to a RSE we express the SE as a percentage of the estimate, or 13,600/579,100 = 2.3%. The SE for the number of male small business operators in NSW was calculated above as 11,800, which converted to a RSE is 11,800/411,100 = 2.9%. Applying the above formula, the RSE of the proportion is:

$$RSE = \sqrt{(2.9)^2 - (2.3)^2} = 1.8\%$$

giving a SE for the proportion (71.0%) of 1.3 percentage points ( $= (71.0/100)*1.8$ ).

**28** Therefore, there are about two chances in three that the proportion of small business operators in NSW who are male is between 69.7% and 72.3% and 19 chances in 20 that the proportion is within the range 68.4% to 73.6%.

**29** Similarly, SEs can be calculated for estimates of the proportion of small businesses using the same formula.

#### Differences

**30** Published estimates may also be used to calculate the difference between two survey estimates (of numbers or percentages). Such an estimate is subject to sampling error. The sampling error of the difference between two estimates depends on their SEs and the relationship (correlation) between them. An approximate SE of the difference between two estimates ( $x-y$ ) may be calculated by the following formula:

$$SE(x-y) = \sqrt{[SE(x)]^2 + [SE(y)]^2}$$

**31** While this formula will only be exact for differences between separate and uncorrelated characteristics or sub-populations, it is expected to provide a good approximation for all differences likely to be of interest in this publication.

#### Non-sampling errors

**32** The imprecision due to sampling variability, which is measured by the SE, should not be confused with inaccuracies that may occur due to non-sampling errors.

**33** Non-sampling errors can occur whether the estimates are derived from a sample or from a complete enumeration. Three major sources of non-sampling error are:

- Inability to obtain comprehensive data from all people included in the sample. These errors arise because of differences which exist between the characteristics of respondents and non-respondents.
- Errors in reporting on the part of both respondents and interviewers. These reporting errors may arise through inappropriate wording of questions, misunderstanding of what data are required, inability or unwillingness to provide accurate information and mistakes in answers to questions.
- Errors arising during processing of the survey data. These processing errors may arise through mistakes in coding and data recording.

**34** Non-sampling errors are difficult to measure in any collection. However, every effort was made to minimise these errors. In particular, the effect of the reporting and processing errors described above was minimised by careful questionnaire design, intensive training and supervision of interviewers, asking respondents to refer to records whenever possible and extensive editing and quality control checking at all stages of data processing.

## SURVEY ESTIMATION AND WEIGHTING PROCEDURES

**35** Estimates derived from the survey are obtained by using a calibrated weighting procedure which ensures that the survey estimates conform to an independently estimated distribution of the population by area of residence, age and sex.

**36** Two separate weights were used for the survey:

- a person weight used in the estimation of small business operators
- a business weight used in the estimation of small businesses.

**37** Each person in the sample is assigned a 'weight' which takes into account their probability of selection in the sample from their region, with adjustments to account for under-enumeration (e.g. non-response) at the age and sex level.

**38** The 'weights' are also adjusted to reduce the bias introduced by varying levels of non-response in different sub-groups of the population.

**39** Business weights are derived from the person weights using partner per business information.

## Glossary

### Business operator(s)

There is no standard definition of a small business operator and other ABS publications do not use the term, or provide statistics about small business operators as a group. However, the expression 'small business operator' is one that is often used in research and policy debate and is generally taken to include the following group of people:

The person or persons who own and run the business. Generally these business operators can be identified as:

- the proprietor of a sole proprietorship
- the partners of a partnership
- the working director(s) of an incorporated company.

### Computer

Includes personal computers (PCs), laptops, note books, mainframes and mini-computers.

### Email

Electronic mail is a facility which allows network users to exchange messages (including text and attachments).

## **Full-time operator(s)**

A full time operator is one who usually works 35 hours or more a week in the business.

## **Home based businesses**

Where the person(s) usually conducts most of their work at or from their residential address. Refer also to Chapter 3 - Introduction, for additional clarification.

## **Internet**

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (www), Internet Electronic Data Interchange and Simple Mail Transport Protocol (SMTP).

## **Length of operation**

The length of time the business has been operated by the current operator.

## **Operated at home**

A home based business where most of the work of the business was carried out at the home(s) of the operator(s).

## **Operated from home**

A home based business where the business had no other premises owned or rented other than the home(s) of the operator(s).

## **Part-time operator(s)**

A part time operator is one who usually works less than 35 hours a week in the business.

## **Small business**

Small businesses (excluding agricultural businesses) are those businesses employing less than 20 people. The categories presented in this publication are as follows:

- non-employing businesses - sole proprietors and partnerships without employees
- businesses with 1-4 employees
- businesses with 5-19 employees.

Together, these three groups form the small business category - those businesses employing less than 20 people.

Note that because operators of all incorporated businesses are considered employees of that corporation, all incorporated businesses will be classified as employing businesses.

## **Abbreviations**

The following abbreviations have been used in this publication

ABS	Australian Bureau of Statistics
ANZSIC	Australian and New Zealand Standard Industrial Classification
FTE	full-time equivalent
RSE	relative standard error
SE	standard error

## Appendix

### APPENDIX STANDARD ERROR TABLES

#### STANDARD ERROR TABLES

##### STANDARD ERRORS OF ESTIMATES, Number of small business operator: Estimates

Size of estimate ('000)	Aust.									
	NSW '000	Vic. '000	Qld '000	SA '000	WA '000	Tas. '000	NT '000	ACT '000	Standard error '000	Relative standard error %
0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2	200.0
0.2	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.3	145.0
0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.4	116.7
0.5	0.5	0.4	0.4	0.3	0.4	0.2	0.3	0.3	0.5	90.0
0.7	0.6	0.5	0.4	0.4	0.5	0.3	0.3	0.3	0.5	77.1
1.0	0.7	0.6	0.5	0.5	0.5	0.3	0.4	0.4	0.6	64.0
1.5	0.9	0.8	0.7	0.6	0.6	0.4	0.5	0.4	0.8	52.0
2.0	1.0	0.9	0.8	0.6	0.7	0.5	0.5	0.5	0.9	45.0
2.5	1.1	1.0	0.9	0.7	0.8	0.6	0.6	0.6	1.0	40.0
3.0	1.2	1.1	1.0	0.8	0.9	0.6	0.7	0.6	1.1	36.7
3.5	1.3	1.2	1.1	0.9	0.9	0.7	0.8	0.7	1.2	34.3
4.0	1.4	1.3	1.2	0.9	1.0	0.8	0.9	0.7	1.3	31.3
5.0	1.6	1.4	1.3	1.0	1.1	0.9	1.0	0.8	1.4	28.0
7.0	1.9	1.7	1.5	1.2	1.3	1.0	1.2	1.0	1.7	23.6
10	2.2	2.0	1.9	1.5	1.5	1.3	1.5	1.1	2.0	19.5
15	2.7	2.5	2.3	1.8	1.8	1.6	1.9	1.4	2.4	16.0
20	3.1	2.9	2.6	2.1	2.1	2.0	2.4	1.6	2.8	13.8
30	3.7	3.5	3.1	2.6	2.6	2.5	3.1	2.0	3.4	11.2
40	4.2	4.1	3.6	3.0	3.0	3.1	3.8	2.4	3.9	9.6
50	4.7	4.6	4.0	3.4	3.4	3.5	4.4	2.7	4.3	8.6
100	6.4	6.6	5.4	4.9	5.0	5.7	7.2	3.9	6.0	6.0
150	7.7	8.1	6.4	6.1	6.3	7.5	9.6	4.9	7.3	4.9
200	8.7	9.4	7.2	7.1	7.4	9.2	11.9	5.7	8.4	4.2
300	10.4	11.6	8.5	8.9	9.4	12.4	-	7.2	10.2	3.4
500	12.9	15.2	10.4	11.8	12.8	18.0	-	-	13.0	2.6
1000	17.2	21.8	13.6	17.5	19.9	-	-	-	18.1	1.8
2000	22.8	31.4	17.4	26.0	31.3	-	-	-	25.1	1.3
5000	32.6	51.0	23.6	-	-	-	-	-	38.8	0.8
10000	-	-	-	-	-	-	-	-	53.8	0.5

- nil or rounded to zero (including null cells)

##### STANDARD ERRORS OF ESTIMATES, Number of small business: Estimates

Size of estimate ('000)	Aust.									
	NSW '000	Vic. '000	Qld '000	SA '000	WA '000	Tas. '000	NT '000	ACT '000	Standard error '000	Relative standard error %
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	150.0
0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	105.0
0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	86.7
0.5	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	66.0
0.7	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	57.1
1.0	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.3	0.5	48.0
1.5	0.7	0.6	0.5	0.5	0.5	0.4	0.5	0.4	0.6	39.3
2.0	0.8	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.7	34.5
2.5	1.0	0.8	0.7	0.7	0.7	0.6	0.6	0.5	0.8	30.0
3.0	1.1	0.9	0.8	0.8	0.8	0.6	0.7	0.6	0.9	28.3
3.5	1.1	1.0	0.9	0.8	0.8	0.7	0.8	0.7	0.9	25.7
4.0	1.2	1.1	0.9	0.9	0.9	0.7	0.8	0.7	1.0	25.0
5.0	1.4	1.2	1.0	1.0	1.0	0.8	0.9	0.8	1.1	22.0
7.0	1.7	1.5	1.2	1.2	1.2	0.9	1.1	0.9	1.3	18.6
10	2.0	1.8	1.5	1.4	1.5	1.1	1.4	1.1	1.6	16.0
15	2.5	2.2	1.9	1.7	1.8	1.3	1.7	1.4	2.0	13.0

20	2.8	2.6	2.2	2.0	2.1	1.5	2.0	1.6	2.3	11.5
30	3.4	3.3	2.7	2.4	2.5	1.7	2.5	2.0	2.8	9.3
40	3.9	3.9	3.1	2.7	2.9	1.9	2.9	2.3	3.3	8.3
50	4.3	4.4	3.4	3.0	3.2	2.0	3.2	2.6	3.7	7.4
100	5.8	6.4	4.9	4.0	4.5	2.6	4.7	3.6	5.3	5.3
150	6.8	8.0	6.0	4.8	5.4	2.9	5.8	4.4	6.6	4.4
200	7.6	9.4	6.9	5.4	6.1	3.2	6.7	5.0	7.7	3.8
300	8.9	11.7	8.5	6.3	7.3	3.5	-	6.0	9.5	3.2
500	10.6	15.4	10.9	7.6	9.0	4.0	-	-	12.5	2.5
1000	13.4	22.3	15.2	9.7	12.0	-	-	-	18.1	1.8
2000	16.4	32.0	21.1	12.2	15.7	-	-	-	26.2	1.3
5000	20.9	51.4	32.5	-	-	-	-	-	42.8	0.9
10000	-	-	-	-	-	-	-	-	62.2	0.6

- nil or rounded to zero (including null cells)

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